The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A method for reducing laser speckle noise observed in an image by a detector in a non-contact non-moving gauge measurement system, comprising:

projecting laser light having known speckle contrast onto a surface of an object;

establishing, using said known speckle contrast and known measurement system accuracy limitations, a maximum observable speckle size; and

selecting a detector lens having a lens f-number such that the size of the observed speckle points in said image is smaller than said maximum observable speckle size; and

observing a laser light scatter distribution on the surface of said object,

wherein the size of the laser speckle noise observed by said detector in said image is determined by a convolution of the inverse Fourier transform of said laser light scatter distribution, and an impulse response of said detector lens.

2. (Canceled)

3. (Currently amended) The method of Claim ~~2~~ 1 for reducing laser speckle noise wherein said impulse response of said detector lens is determined from said detector lens f-number and a diffraction equation for a lens aperture.

4. (Original) The method of Claim 1 for reducing laser speckle noise wherein said laser light is projected from a slab diode laser.

5. (Currently amended) A method for reducing speckle noise present in an image of a laser line projected onto a surface of an object and observed through a lens by a detector, comprising:

observing laser light scatter distribution on ~~from~~ the surface of the object;,

wherein the size of the speckle noise observed through said lens by said detector in said image is determined by a convolution of the inverse Fourier transform of said laser light scatter distribution, and an impulse response of said lens;

utilizing said observed laser light scatter distribution to identify a minimum speckle noise size obtainable through lens f-number reduction;

determining a lens f-number value corresponding to said identified minimum speckle noise size; and

altering said detector lens by adjusting said lens f-number to said determined value.

6. (Original) The method of Claim 5 for reducing speckle noise present in an image of a laser line, further comprising:

observing the surface finish characteristics of said object; and

altering the coherence of said laser relative to said observed surface finish characteristics to reduce speckle noise.

7. (Original) The method of Claim 6 for reducing speckle noise present in an image of a laser line wherein said laser coherence is reduced.

8. (Original) The method of Claim 6 for reducing speckle noise present in an image of a laser line, further comprising:

measuring a range of light scatter angles in said observed laser light scatter from the surface finish of the object; and

wherein said range of scatter angles defines a minimum speckle noise size obtainable through lens f-number reduction.

9. (Currently amended) A method for reducing speckle noise present in an image of a laser line projected onto a surface of an object and observed through a lens by a detector, comprising:

observing laser light scatter distribution on the surface of the object;,

wherein the size of the speckle noise observed through said lens by said detector in said image is determined by a convolution of the inverse Fourier transform of said laser light scatter distribution, and an impulse response of said lens;

utilizing said observed laser light scatter distribution to identify ~~identifying~~ a minimum resolving power required to observe said projected laser line to within a predetermined range of measurement accuracy; and

altering said detector lens by reducing a lens f-number to a minimum value having a resolution corresponding to said identified minimum resolving power.

10. (Original) The method of Claim 9 for reducing speckle noise present in an image further including reducing the coherence of laser light projected onto the surface of said object relative to the structure of the surface scatter.